

Application No. 10/825737 (Docket: CNTR.2210)
37 CFR 1.111 Amendment dated 07/17/2007
Reply to Office Action of 04/18/2007

AMENDMENTS TO THE CLAIMS

Kindly amend claims 1, 7, and 15 as shown in the following listing of claims. The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A microprocessor with temperature control, comprising:
a microprocessor die with an external interface for externally providing a variable fan control signal; and
fan control logic, provided on said microprocessor die, that provides said variable fan control signal based on temperature information associated with the microprocessor, wherein said variable fan control signal is directly coupled to an external fan to directly control said external fan, and wherein said fan control signal is operative to variably control rotational speed of said external fan, and wherein said fan control logic adjusts operation of said external fan to achieve an optimum blend of reliability, power consumption, and speed of the microprocessor.
2. (Previously Presented) The microprocessor of claim 1, wherein said fan control signal is operative to turn said external fan on and off.
3. (Previously Presented) The microprocessor of claim 1, wherein said fan control signal comprises a variable output in digital format.
4. (Original) The microprocessor of claim 1, further comprising temperature sense logic, provided on said microprocessor die and coupled to said fan control logic, that provides said temperature information.
5. (Original) The microprocessor of claim 4, wherein said temperature sense logic comprises at least one temperature sensor placed on said microprocessor die.
6. (Original) The microprocessor of claim 1, wherein said external interface receives said temperature information from an external source.

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7. (Currently Amended) A microprocessor temperature control system, comprising:

a microprocessor including on-chip fan control logic that receives temperature information and that provides a variable fan control signal to cool said microprocessor;

a fan, externally mounted to said microprocessor, having a control input directly coupled to said variable fan control signal, wherein said variable fan control signal is operative to directly control said fan, and wherein said fan control logic varies rotational speed of said fan, and wherein said fan control logic adjusts operation of said fan to achieve an optimum blend of reliability, power consumption, and speed of said microprocessor; and

temperature sense logic that provides said temperature information associated with said microprocessor.
8. (Original) The microprocessor temperature control system of claim 7, wherein said fan control logic turns said fan on and off.
9. (Previously Presented) The microprocessor temperature control system of claim 7, wherein said variable fan control signal comprises a variable output in analog format.
10. (Original) The microprocessor temperature control system of claim 7, wherein said temperature sense logic comprises at least one temperature sensitive device placed on the die of said microprocessor.
11. (Original) The microprocessor temperature control system of claim 10, wherein said at least one temperature sensitive device comprises a thermocouple.
12. (Original) The microprocessor temperature control system of claim 10, wherein said at least one temperature sensitive device comprises a thermal diode.
13. (Original) The microprocessor temperature control system of claim 7, wherein said temperature sense logic is provided on-chip of said microprocessor.

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14. (Original) The microprocessor temperature control system of claim 7, wherein said temperature sense logic is external to said microprocessor and provides said temperature information via an external interface.
15. (Currently Amended) A method of controlling temperature of a microprocessor, comprising:

sensing temperature associated with the microprocessor;

determining, by the microprocessor, a fan control parameter for controlling an externally mounted fan for cooling the microprocessor;

providing, by the microprocessor, a variable fan control signal indicative of the fan control parameter for variably controlling the fan, wherein said providing comprises:

adjusting operation of the externally mounted fan to achieve an optimum blend of reliability, power consumption, and speed of the microprocessor; and

varying rotational speed of the fan using the variable fan control signal.
16. (Previously Presented) The method of claim 15, further comprising turning the fan on and off using the variable fan control signal.
17. (Previously Presented) The method of claim 15, wherein said determining comprises:

basing the fan control parameter, in addition, upon current operating conditions of the microprocessor.
18. (Original) The method of claim 15, wherein said sensing temperature comprises measuring temperature using a temperature sensor mounted to the die of the microprocessor.
19. (Original) The method of claim 15, wherein said sensing temperature comprises measuring temperature externally to the microprocessor.

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20. (Original) The method of claim 19, further comprising providing externally measured temperature information to the microprocessor via an external interface.